PATENT ABSTRACTS OF JAPAN

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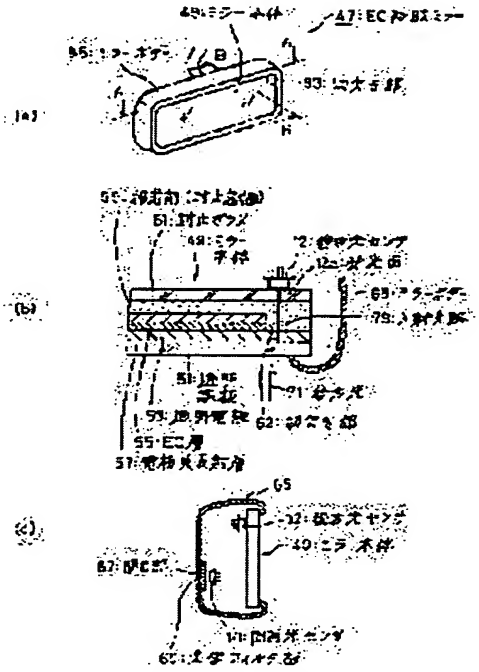
(54) ELECTROCHROMIC ANTIDAZZLE MIRROR

(57)Abstract:

PURPOSE: To make it possible to easily obtain ideal sensitivity characteristics when a coloration quantity is automatically controlled by detecting ambient light quantity and backward light quantity.

CONSTITUTION: A mirror body 49 is constituted by laminating, successively from a front surface side, a transparent glass 51 (glass), transparent electrodes 53, an EC layer 55 and a reflection layer 57 in common use as an electrode and sealing the entire part thereof with an adhesive 59 (sealing resin) and sealing glass 61. The EC layer 55 and the reflection layer 57 are notched at the corner of the mirror body 49 and a backward optical sensor 12, such as CdS, is fixed and arranged in the position behind the notched part 63 within the mirror body 65. As a result, backward light 71 is received in the backward optical sensor 12 through the notched part 63. The sealing glass 61 or the sealing resin 59 is subjected to coloring, etc., to constitute an optical filter means, by which the photodetecting quantity of the backward optical sensor 12 is adjusted.



Published Japanese Patent Applications: JP, 1993-106110, A

CLAIMS

[Claim(s)]

[Claim 1] The electrochromic anti-dazzle mirror which comes to arrange the light filter means of the light-transmittance fixation which decreases the amount of incident lights to the sensor concerned the aforementioned ambient-light sensor, a back photosensor, or ahead of both light-receiving sides in the electrochromic anti-dazzle mirror to which equip with the back photosensor which detects the ambient-light sensor and the back quantity of light which detect the amount of ambient lights, and it was made to change the amount of coloring according to the detection quantity of light of both [these] sensors.

[Claim 2] The mirror main part which laminating arrangement of a transparent substrate, a transparent electrode, EC layer, and an electrode-cum-the reflecting layer is carried out at least, and comes to close the back with a closure resin and closure glass from a right face side, In the electrochromic anti-dazzle mirror to which equip with the back photosensor which detects the ambient-light sensor and the back quantity of light which detect the amount of ambient lights, and it was made to change the amount of coloring of the aforementioned EC layer according to the detection quantity of light of both [these] sensors The portion from which there are not a portion which does not have the aforementioned EC layer and an electrode-cum-the aforementioned reflecting layer in the aforementioned mirror main part or the aforementioned transparent electrode, and the aforementioned EC layer, and an electrode-cum-the aforementioned reflecting layer constitutes a one-way mirror is formed. The aforementioned back photosensor is arranged in the back position of the mirror main part concerned in the portion concerned. The incident-light way of back light is constituted so that back light may penetrate the aforementioned transparent substrate, the aforementioned closure resin, and the aforementioned closure glass and incidence may be carried out to the light-receiving side of the back photosensor concerned. by the incident-light on the street of the back light concerned The

electrochromic anti-dazzle mirror which comes to arrange the light filter means of the light-transmittance fixation which decreases the amount of incident lights to the back photosensor concerned into one in the middle of reaching [from the tooth back of the aforementioned transparent substrate] the light-receiving side of the aforementioned back photosensor of portions.

[Claim 3] The electrochromic anti-dazzle mirror according to claim 2 which it comes to consist of aforementioned closure glass with which the aforementioned light filter colored or was formed in the shape of ground glass.

[Claim 4] The electrochromic anti-dazzle mirror according to claim 2 which comes to consist of the aforementioned light filter means aforementioned colored closure resins.

[Claim 5] The electrochromic anti-dazzle mirror according to claim 2 which it comes to consist of the films or sheet metal optically designed so that the aforementioned light filter means might absorb a part of incident light or might reflect.

[Claim 6] The electrochromic anti-dazzle mirror according to claim 1 to 5 which it is designed optically and the aforementioned light filter means becomes so that the red wavelength field of the light may be decreased especially among the amounts of incident lights to the aforementioned back photosensor.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] When this invention detects the amount of ambient lights, and the back quantity of light about the electrochromic (henceforth "EC") anti-dazzle mirror used for the inner mirror of vehicles, an outer mirror, etc. and it controls the amount of coloring automatically, an ideal sensitivity property is acquired easily.

[0002]

[Description of the Prior Art] The anti-dazzle effect is acquired to the headlight of a consecutiveness vehicle night at the time of a run etc. by EC anti-dazzle mirror's wearing the front face of a mirror reflector by EC film, changing the amount of coloring of this film, and controlling a reflection factor. in order to acquire such an anti-dazzle effect -- EC anti-dazzle mirror -- the surrounding quantity of light and the amount of

incident lights of a back shell -- detecting -- time [when an ambient light is dark] back light is bright -- the amount of coloring -- many -- carrying out (a reflection factor being reduced.) -- time [when an ambient light is dark] back light is dark -- the amount of coloring -- few -- carrying out (it decolorizing.) That is, a reflection factor is made high. When an ambient light is bright, as it is not based on the light and darkness of back light but decolorizes, the amount of coloring is controlled automatically.

[0003] As an example of arrangement of the photosensor (back photosensor) for detecting the back quantity of light in the conventional EC anti-dazzle mirror, a thing given in JP,1-172027,U is shown in drawing 2 . This EC anti-dazzle mirror 11 carries out the laminating of the EC layer 15 and the reflecting layer 17 to the tooth back of the transparent substrate 13, and is constituted. the EC layer 15 and a reflecting layer 17 -- a part -- a notch -- him -- **** 19 is formed, the back photosensor 9 is arranged in the back position, and back light is received

[0004] As another example of arrangement of the conventional back photosensor, a thing given in JP,2-131731,U is shown in drawing 3 . This EC anti-dazzle mirror 21 carries out the laminating of a transparent electrode 25, the oxidization coloring EC layer 27, the ion conductive layer 29, the reduction coloring EC layer 31, a transparent electrode 33, and the reflector 35 to the tooth back of the transparent substrate 21, and closes the whole tooth back with the closure resin 37 and closure glass 39. a reflector 35 -- a part -- a notch -- him -- **** 41 is formed, the back photosensor 43 is arranged in the back position, and back light is received

[0005]

[Problem(s) to be Solved by the Invention] Since according to the EC anti-dazzle mirror 11 of aforementioned drawing 2 the back photosensor 9 received the back light by which incidence is carried out almost as it was and adjustment of a sensitivity property was performed by the electrical circuit, there was a fault to which an electrical circuit becomes complicated. Moreover, since the EC layer 15 and reflecting layer 17 which have been exposed to the tooth back of a reflecting layer 17 or the internal surface of an aperture 19 were exposed to the open air, corrosion and the injuries on other may have been received. Moreover, when protective coating was made the internal surface of a reflecting layer 17 and an aperture 19, it had to mask so that **** paint might not start the tooth-back portion of the transparent substrate 13 exposed in an aperture 19, and this problem had time and effort.

[0006] According to the EC anti-dazzle mirror 21 of aforementioned drawing 3 , since the EC layers 27 and 31 were ahead of the back photosensor 43, the EC layers 27 and

31 wore, and by decolorization, the light income of the back photosensor 43 changed, it wore [in / the mirror / in the back light of the same quantity of light] with change of light income in quick EC element of EC reaction, decolorization was repeated, and there was a problem to which a flicker takes place.

[0007] Moreover, by the EC anti-dazzle mirror 11 of drawing 2 , the back photosensors 9 and 43 could always be seen from the operator by the EC anti-dazzle mirror 21 of drawing 3 again at the time of decolorization, and appearance quality was bad. Moreover, drawing 2 and the EC anti-dazzle mirrors 11 and 21 of drawing 3 were colored in response to the light of the red revolving light of urgent vehicles, and there was a danger of overlooking approach of urgent vehicles.

[0008] This invention was made in view of the above-mentioned point, and aims at offering EC anti-dazzle mirror which can set up an ideal sensitivity property easily. Moreover, another purpose is offering EC anti-dazzle mirror with unclear existence of a back photosensor from an operator moreover, without EC layer's wearing and being influenced of decolorization. Moreover, another purpose is preventing degradation of EC element or a reflecting layer. Still more nearly another purpose is offering EC anti-dazzle mirror which does not react to the light of the red revolving light of urgent vehicles.

[0009]

[Means for Solving the Problem] Invention according to claim 1 is equipped with the back photosensor which detects the ambient-light sensor and the back quantity of light which detect the amount of ambient lights, and comes to arrange the light filter means of the light-transmittance fixation which decreases the amount of incident lights to the sensor concerned the aforementioned ambient-light sensor, a back photosensor, or ahead of both light-receiving sides in the electrochromic anti-dazzle mirror to which it was made to change the amount of coloring according to the detection quantity of light of both [these] sensors.

[0010] The mirror main part on which laminating arrangement is carried out and, as for invention according to claim 2, a transparent substrate, a transparent electrode, EC layer, and an electrode-cum-a reflecting layer come to close the back with a closure resin and closure glass from a right face side at least, In the electrochromic anti-dazzle mirror to which equip with the back photosensor which detects the ambient-light sensor and the back quantity of light which detect the amount of ambient lights, and it was made to change the amount of coloring of the aforementioned EC layer according to the detection quantity of light of both [these] sensors The portion from which there are not a portion which does not have the

aforementioned EC layer and an electrode-cum-the aforementioned reflecting layer in the aforementioned mirror main part or the aforementioned transparent electrode, and the aforementioned EC layer, and an electrode-cum-the aforementioned reflecting layer constitutes a one-way mirror is formed. The aforementioned back photosensor is arranged in the back position of the mirror main part concerned in the portion concerned. The incident-light way of back light is constituted so that back light may penetrate the aforementioned transparent substrate, the aforementioned closure resin, and the aforementioned closure glass and incidence may be carried out to the light-receiving side of the back photosensor concerned. by the incident-light on the street of the back light concerned It comes to arrange the light filter means of the light-transmittance fixation which decreases the amount of incident lights to the back photosensor concerned into one in the middle of reaching [from the tooth back of the aforementioned transparent substrate] the light-receiving side of the aforementioned back photosensor of portions.

[0011] It comes to consist of invention according to claim 3 aforementioned closure glass with which the aforementioned light filter colored or was formed in the shape of ground glass. It comes to consist of invention according to claim 4 aforementioned closure resins which the aforementioned light filter means colored. It comes to consist of invention according to claim 5 the films or sheet metal optically designed so that the aforementioned light filter means might absorb a part of incident light or might reflect.

[0012] It is designed optically and the aforementioned light filter means becomes so that especially invention according to claim 6 may decrease the red wavelength field of the light among the amounts of incident lights to the aforementioned back photosensor.

[0013]

[Function] Since the light filter means of the light-transmittance fixation which decreases the amount of incident lights to the sensor concerned an ambient-light sensor, a back photosensor, or ahead of both light-receiving sides has been arranged according to invention according to claim 1, it can be easily set as an ideal sensitivity property by choosing the filter shape of a light filter means, without complicating an electrical circuit. Moreover, when a filter means is allotted to a back photosensor, existence of a back photosensor becomes unclear for an operator, and appearance quality improves.

[0014] According to invention according to claim 2, lose EC layer and an electrode-cum-a reflecting layer from on the optical path of a back photosensor

(even if there is a transparent electrode, there may be), lose a transparent electrode and EC layer, and an electrode-cum-a reflecting layer is used as a one-way mirror. [no] Since it is made for the optical path concerned to pass a closure resin and closure glass and the filter means of light-transmittance fixation was allotted on the optical path concerned (the case where a filter means is constituted only from an above-mentioned one-way mirror is included.) A back photosensor can detect the back quantity of light, without EC layer's wearing and being influenced of decolorization. Moreover, it can be easily set as an ideal sensitivity property by choosing the filter shape of a filter means, without complicating an electrical circuit. Moreover, since EC layer and an electrode-cum-the reflecting layer are closed with a closure resin and closure glass, it is intercepted from the open air and the degradation can be prevented. Moreover, by existence of a filter means, a back photosensor stops being able to be visible from an operator easily, and appearance quality improves.

[0015] Since it constituted from closure glass which colored or formed the light filter means in the shape of ground glass according to invention according to claim 3, the parts only for light filter meanses do not need to become unnecessary, and part mark do not need to increase. Since the light filter means was constituted from a colored closure resin according to invention according to claim 4, the parts only for light filter meanses do not need to become unnecessary, and part mark do not need to increase. According to invention according to claim 5, a filter means can consist of the films or sheet metal which absorbs a part of incident light, or is reflected.

[0016] Since according to invention according to claim 6 the filter means was optically designed so that the red wavelength field of the light might be decreased especially among the amounts of incident lights to a back photosensor, it can avoid reacting to the light of the red revolving light of urgent vehicles, and an operator can be certainly told about approach of urgent vehicles.

[0017]

[Example] The example of this invention is explained below. Drawing 1 shows one example which applied this invention to the inner mirror. drawing 1 -- setting -- (a) -- an external view and (b) -- the A-A view of (a) part -- an expanded sectional view and (c) are the B-B view cross sections of (a) This EC anti-dazzle mirror 47 holds the mirror main part 49 to front opening of the mirror body 65. The laminating of the transparent substrate 51 (glass), a transparent electrode 53, the EC layer 55, and an electrode-cum-the reflecting layer 57 is carried out, these whole closes the mirror main part 49 with adhesives 59 (closure resin) and closure glass 61, and it consists of right face sides. A transparent electrode can also be separately prepared in the front

face of a reflecting layer 57 instead of making an electrode use also [reflecting layer / 57].

[0018] The EC layer 55 and the reflecting layer 57 are cut and lacked in the corner of the mirror main part 49, and the back photosensors 12, such as CdS, are placed in a fixed position by the back position of this notch 63 in the mirror body 65. Thereby, the back light 71 is received by the back photosensor 12 through a notch 63. Therefore, the quantity of light of the back light 71 can be detected, without the EC layer's 55 wearing and being influenced of decolorization. Moreover, since the EC layer 55 and a reflecting layer 57 are closed with the closure resin 59 and closure glass 61 and are intercepted with the open air, they can prevent the degradation.

[0019] in addition, as a method of forming a notch 63 in the EC layer 55 and a reflecting layer 57 The EC layer 55 and a reflecting layer 57 by vacuum evaporationo etc. all over a mirror For example, after membrane formation, Remove the part by etching etc. and it is formed, or the portion which forms a notch 63 is masked and the EC layer 55 and a reflecting layer 57 are formed by vacuum evaporationo etc. (it is made for a reflecting layer 57 not to overflow the EC layer 55). It can form by things.

[0020] On the incident-light way 73 of the back light 71, the light filter means of the light-transmittance fixation which decreases the amount of incident lights to a back photosensor into one in the middle of resulting in light-receiving side 12a of the back photosensor 12 of portions consists of tooth backs of the transparent substrate 51. The composition method of a light filter means is explained.

[0021] (A) A light filter means consists of closure glass 61 by constituting the method closure glass 61 constituted from closure glass 61 from colored glass, such as bronze glass, or forming the tooth back of closure glass 61 in the shape of ground glass by blast processing etc.

[0022] (B) By coloring with a color etc. the method adhesives 59 constituted from adhesives 59, a light filter means consists of adhesives 59.

[0023] (C) As shown in method drawing 4 constituted from an another member, decrease the amount of incident lights to the back photosensor 12 by making the light filter film (or sheet metal) 75 constituted from optical-absorption material, a one-way mirror, etc. adhere to the tooth back of closure glass 61 etc., and absorbing or reflecting a part of incident light now. Or as shown in drawing 4 (b), the light filter film (or sheet metal) 77 of the same composition as the front face of the back photosensor 12 is made to adhere, and the amount of incident lights to the back photosensor 12 is decreased.

[0024] In addition, the method of above-mentioned (A) - (C) can also be used

together. Moreover, what is necessary is just to give the wavelength-selection nature which makes closure glass 61, adhesives 59, the light filter film 75, and 77 grades decrease about 650-700nm red alternatively, in order to be hard to react to the red revolving light of urgent vehicles and to make it it. It can consider making the film optically designed as the method so that about 650-700nm red might be reflected adhere to the light-receiving side of closure glass 61 or the back photosensor 12. Moreover, it is possible to mix as an option adhesives 59, the light filter film 75, and matter that absorbs about 650-700nm red in 77 grades. If it does in this way, red will stop easily being able to arrive at the light-receiving side of the back photosensor 12, and will stop easily being able to react to the red revolving light of urgent vehicles.

[0025] in addition, everything but above-mentioned (A) - (C) -- an electrode-cum-the reflecting layer 57 -- a one-way mirror -- constituting -- the incident-light way 73 top of the back light 71 -- an electrode-cum-the reflecting layer 57 -- a notch -- ** -- a ** -- as it is -- forming membranes -- -cum- [electrode] -- the function as a filter means can also be given to reflecting layer 57 (it is ****** about a transparent electrode 53 in the portion so that a transparent electrode 53 and an electrode-cum-the reflecting layer 57 may not short-circuit in this If it does in this way, a filter means can also consist of only an electrode-cum-reflecting layers 57.

[0026] In drawing 1 , as shown in drawing 1 (c), opening 67 is formed, and the light filter board 69 is inserted in there and it is fixed to the tooth-back side of the mirror body 65. And the ambient-light sensors 10, such as CdS, are placed in a fixed position by the back position of the light filter board 69 in the mirror body 65. The light filter board 69 decreases the amount of incident lights of the ambient-light sensor 10.

[0027] In addition, although drawing 1 showed the case where a light filter means was established to both sensors 10 and 12, only one side is depending on the purpose. Namely, what is necessary is to prepare only in the back photosensor 12 side, if the reaction prevention to a red revolving light is the purpose. Moreover, at least either is good if it can adjust to a desired sensitivity property only by one side.

[0028] Here, adjustment of the sensitivity property by the light filter means of this invention is explained. Here, these people explain what combined the light filter means of this invention with the driving gear of EC anti-dazzle mirror proposed by Japanese Patent Application No. No. 99291 [six to].

[0029] An amount detection means of ambient lights for the 1st invention of Japanese Patent Application No. No. 99291 [six to] to be the driving gear of EC anti-dazzle mirror from which the reflection factor was constituted by adjustable by EC element, and to detect the amount of ambient lights of vehicles, It is what generates a back

quantity of light detection means to detect the back quantity of light of vehicles, and the oscillation signal which repeats "H" level and "L" level by turns. the persistence time of the persistence time of level and "H" "L" level individually A controllable oscillation means, Adjustable control of the persistence time of one level of the oscillation signal generated from the aforementioned oscillation means according to the detection quantity of light of the aforementioned amount detection means of ambient lights is carried out. The reversal periodic-control means which carries out adjustable control of the persistence time of the level of another side of the oscillation signal concerned according to the detection quantity of light of the aforementioned back quantity of light detection means, It responds to the level of the power supply for a drive of the aforementioned EC element, and "H" of the oscillation signal generated from the aforementioned oscillation means and "L." It comes to provide EC element driving means which are made to reverse the polarity of the driver voltage supplied from the aforementioned power supply for a drive, and are impressed to the aforementioned EC element. When being set up so that the aforementioned EC element driving means may drive the aforementioned EC element in the coloring direction on one level of the aforementioned oscillation signal and may drive the EC element concerned in the decolorization direction on the level of another side When the aforementioned reversal periodic-control means has the large amount of ambient lights, shorten the persistence time of aforementioned one level, and when the amount of ambient lights is small, the persistence time of concerned one level is lengthened. And when the back quantity of light is large, shorten the persistence time of the level of aforementioned another side, and when the back quantity of light is small, the persistence time of the level of the another side concerned is lengthened. When being set up so that the aforementioned EC element driving means may drive the aforementioned EC element in the decolorization direction on one level of the aforementioned oscillation signal and may drive the EC element concerned in the coloring direction on the level of another side When the aforementioned reversal periodic-control means has the large amount of ambient lights, lengthen the persistence time of aforementioned one level, and when the amount of ambient lights is small, the persistence time of concerned one level is shortened. and the driving gear of EC anti-dazzle mirror which is constituted and becomes so that the persistence time of the level of aforementioned another side is lengthened, and the persistence time of the level of the another side concerned may be shortened when the back quantity of light is small when the back quantity of light is large — it comes out [0030] Moreover, the 2nd invention is the driving gear of EC anti-dazzle mirror from

which the reflection factor was constituted by adjustable by EC element. The 1st photoconductive cell to which the ambient light of vehicles is received and resistance decreases according to the quantity of light, The 1st resistance and the 1st diode which were connected to this 1st photoconductive cell in series, and the 1st reversal periodic-control means equipped with the 2nd resistance connected in parallel with the 1st photoconductive cell of the above, The 2nd photoconductive cell to which the back light of vehicles is received and resistance decreases according to the quantity of light, The 3rd the resistance and 1st diode of the above which were connected to this 2nd photoconductive cell in series, and the 2nd diode of an opposite direction, The 2nd reversal periodic-control means equipped with the 4th resistance connected in parallel with the 2nd photoconductive cell of the above is allotted in parallel with the feedback loop. An oscillation means by which the persistence time of one level of an oscillation signal will be shortened if the resistance of the 1st photoconductive cell of the above becomes small, and the persistence time of the level of another side of the oscillation signal concerned will be shortened if the resistance of the 2nd photoconductive cell of the above becomes small, It responds to the level of the power supply for a drive of the aforementioned EC element, and "H" of the aforementioned oscillation signal generated from the aforementioned oscillation means and "L." It is the circuit which is made to reverse the polarity of the driver voltage supplied from the aforementioned power supply for a drive, and is impressed to the aforementioned EC element. the driving gear of EC anti-dazzle mirror which comes to provide EC element drive switching circuit which impresses the voltage of the coloring direction to the aforementioned EC element when the aforementioned oscillation signal is one level, and impresses the voltage of the decolorization direction to the aforementioned EC element when the oscillation signal concerned is the level of another side -- it comes out

[0031] According to the 1st invention, the degree of coloring is controlled by controlling the persistence time of one level of an oscillation signal according to the amount of ambient lights, controlling the persistence time of the level of another side of an oscillation signal according to the back quantity of light, and changing the duty ratio of an oscillation signal. According to this, since what is necessary is just to control an individual controlled system for every ambient light and back light, the composition for compounding the detection value of the amount of ambient lights and the back quantity of light is unnecessary, and can simplify control composition.

[0032] According to the 2nd invention, control of the persistence time of one [according to the amount of ambient lights] level of an oscillation signal is performed

by the 1st reversal periodic-control means, and control of the persistence time of the level of another side of the oscillation signal according to the back quantity of light is performed by the 2nd reversal periodic-control means. And it is made hard to color, even if back light is bright by the 1st, the 1st which were connected to the 2nd photoconductive cell in series, and the 3rd resistance, when an ambient light is bright. Moreover, by the 1st, the 2nd [connected in parallel with the 2nd photoconductive cell], and 4th resistance, when an ambient light is very dark, it has prevented coloring with a back little light.

[0033] One example of EC anti-dazzle mirror driving gear which combined the light filter means of this invention with invention of Japanese Patent Application No. No. 99291 [six to] is shown in drawing 5 . The amount detection means 10 (ambient-light sensor) of ambient lights detects the quantity of light around vehicles, and is arranged towards the vehicles front at the mirror body of an inner mirror or an outer mirror. The back quantity of light detection means 12 (back photosensor) detects the quantity of light from the back of vehicles, and is arranged towards vehicles back at the mirror body. Ahead of light-receiving side 10a of the amount detection means 10 of ambient lights, the filter means 77 (light filter board 69 grade of drawing 1 (c)) is arranged, and an ambient light 81 is attenuated suitably. Ahead of light-receiving side 12a of the back quantity of light detection means 12, the filter means 79 (the closure glass 61 of drawing 1 (b), closure resin 59 grade) is arranged, and the back light 71 is attenuated suitably. In addition, another side is unnecessary if a desired sensitivity property is acquired only by either of the filter meanses 77 and 79.

[0034] The oscillation means 14 generates the oscillation signal which repeats "H" level and "L" level by turns, and the persistence time of the persistence time of level and "H" "L" level is constituted possible [control] individually. In addition, as for the oscillation period of the oscillation means 14, it is desirable to make it 10 or less ms so that a flicker of decolorization and coloring may not be known by human being's eyes. The reversal periodic-control means 16 carries out adjustable control of the persistence time of one level of the oscillation signal generated from the aforementioned oscillation means 14 according to the detection quantity of light of the amount detection means 10 of ambient lights. Moreover, according to the detection quantity of light of the back quantity of light detection means 12, adjustable control of the persistence time of the level of another side of an oscillation signal is carried out.

[0035] The power supply 22 for a drive supplies the power for a drive to the oscillation means 14 and the EC element 20. EC element driving means 24 control the amount of

coloring according to the duty ratio of an oscillation signal by reversing the polarity of the driver voltage supplied from the power supply 22 for a drive according to the level of the oscillation signal generated from the oscillation means 14, and being impressed by the aforementioned EC element 20.

[0036] The contents of control of the duty ratio by the reversal periodic-control means 16 are as follows. Namely, EC element driving means 24 drive the EC element 20 in the coloring direction on one level of an oscillation signal. When being set up so that the EC element 20 may be driven in the decolorization direction on the level of another side When the amount of ambient lights is large, the reversal periodic-control means 16 shortens the persistence time of aforementioned one level, and when the amount of ambient lights is small, it lengthens the persistence time of concerned one level. And when the back quantity of light is large, the persistence time of the level of aforementioned another side is shortened, and when the back quantity of light is small, the persistence time of the level of the another side concerned is lengthened. Moreover, when being set up so that EC element driving means 24 may drive the EC element 20 in the decolorization direction on one level of an oscillation signal and may drive the EC element 20 in the coloring direction on the level of another side When the amount of ambient lights is large, the reversal periodic-control means 16 lengthens the persistence time of aforementioned one level, and when the amount of ambient lights is small, it shortens the persistence time of concerned one level. And when the back quantity of light is large, the persistence time of the level of aforementioned another side is lengthened, and when the back quantity of light is small, the persistence time of the level of the another side concerned is shortened.

[0037] The amount of coloring is continuously controlled by such control. That is, when an ambient light is dark, the sensitivity to back light becomes high, the amount of coloring increases with increase of the back quantity of light, a reflection factor falls, and an anti-dazzle state is acquired. Moreover, when an ambient light is bright, the sensitivity to back light falls, it is hard coming to color, and a reflection factor is held at a high state.

[0038] Next, the example of the driving gear of EC anti-dazzle mirror of drawing 5 is shown in drawing 6 . A common sign is used for the portion corresponding to each part of drawing 5 . The case where made into one level "L" level of the oscillation signal generated from an oscillation means here, made "H" level into the level of another side, and the object for the drive of the coloring direction and level of another side are carried out for one level to the drive of the decolorization direction is shown. The power supply 22 for a drive inputs +12V direct current voltage from a dc-battery,

changes it into abbreviation +1.6V direct current voltage in the positive-supply circuit 26, and is changed into abbreviation-1.6V direct current voltage in the negative-supply circuit 28. If constituted from switching power supply, even if these positive/negative power circuits 26 and 28 are efficient and it builds them in mirror housing, they do not take a space, but moreover, will also have little generation of heat and will end.

[0039] The reversal periodic-control means 16 is allotted into the feedback loop, and, as for the oscillation means 14, the amount detection means 10 of ambient lights and the back quantity of light detection means 12 are allotted in the reversal periodic-control means 16. The reversal periodic-control means 16 consists of coloring side pulse generating section 16a and decolorization side pulse generating section 16b. Coloring side pulse generating section 16a consists of CdS10 which constitutes an ambient-light detection means, and resistance R2 connected in parallel with the resistance R1 and diodes D1 and CdS10 which were connected to this CdS10 in series. Decolorization side pulse generating section 16b consists of CdS12 which constitutes a back photodetection means, and resistance R4 connected in parallel with the resistance R3 and diodes D3 and CdS12 which were connected to this CdS12 in series.

[0040] If the quantity of light increases, resistance will fall, and CdS has the property which resistance goes up, when the quantity of light falls. Therefore, as the oscillation signal outputted from the oscillation means 14 of drawing 6 is shown in drawing 7 , the period t1 of "H" level changes according to the back quantity of light (it becomes so short that it becomes bright.), and the period t2 of "L" level changes according to the amount of ambient lights (it becomes so short that it becomes bright). And when the amount of ambient lights and the back quantity of light are equal, when the amount of ambient lights is smaller than the back quantity of light, like drawing 8 (a), like drawing 8 (b), it is set to $t1=t2$, and it is set to $t1<t2$, and when the amount of ambient lights is larger than the back quantity of light, it is set to $t1>t2$ like drawing 8 (c). Since decolorization energy is supplied in a period t1 and coloring energy is supplied in a period t2, $t1<t2$ become a coloring inclination and $t1>t2$ become a decolorization inclination at the EC element 20.

[0041] By the way, although it will not be necessary to be in a coloring state when controlling the amount of coloring according to the relation between the amount of ambient lights, and the back quantity of light when an ambient light is bright (for example, 5-30 luxs or more) if a coloring field and a decolorization field are simply classified bordering on the solid line A of drawing 9 , it will be colored when back light

is bright. Therefore, when an ambient light is brighter than fixed level, as an alternate long and short dash line B shows to drawing 9 , it is desirable for it not to be based on the back quantity of light, but to consider as a decolorization field. Moreover, in the field partition by the solid line A, when an ambient light is very dark (for example, 0.02 luxs or less), that a little light entered from back will also color. Therefore, considering as a decolorization field is desirable until back light becomes more than fixed level as a dotted line C shows to drawing 9 , when below fixed level is dark as for an ambient light.

[0042] The resistance R1 and R3 connected to CdS 10 and 12 of drawing 6 in series realizes the inclination of the alternate long and short dash line B of drawing 9 , and the resistance R2 and R4 connected in parallel with CdS 10 and 12 realizes the inclination of the dotted line C of drawing 9 . That is, the periods t1 and t2 of "H" level and "L" level of the oscillation output of the oscillator circuit 14 of drawing 6 are expressed as follows, respectively.

[0043]

t1= {(R4, r12)/(R4+r12)+R3}

- C1x1.1 (1)

t2= {(R2, r10)/(R2+r10)+R1}

- C1x1.1 (2)

However, since the resistance r10 of CdS10 will become small if an ambient light becomes bright according to the resistance [of r10:CdS10] r12:resistance (2) formula of CdS12, although the coloring energy supply period t2 becomes short, since there is resistance R1, if an ambient light becomes above bright to some extent, the downward tendency of a period t2 can be weakened. Moreover, if back light becomes bright according to the (1) formula, since the resistance r12 of CdS12 will become small, although the decolorization energy supply period t1 becomes short, since there is resistance R3, if back light becomes bright above to some extent, the downward tendency of a period t1 can be weakened. Therefore, an ambient light and back light are near stabilized by the duty ratio of an oscillation signal about 50% in a bright field, and the difference of coloring energy and decolorization energy becomes small. And supposing the property of the reflection factor of EC anti-dazzle mirror seems to be drawing 10 now, near, a duty ratio serves as a high reflection property mostly 50%, and can maintain at a decolorization state.

[0044] Since the resistance r10 of CdS10 will become large if an ambient light becomes dark on the other hand according to the (2) formulas, although the coloring energy supply period t2 becomes long, since there is resistance R2, if an ambient light

becomes dark above to some extent, the expansion inclination of a period t2 can be weakened. Moreover, if back light becomes dark according to the (1) formula, since the resistance r12 of CdS12 will become large, although the decolorization energy supply period t1 becomes long, since there is resistance R4, if back light becomes dark above to some extent, the expansion inclination of a period t1 can be weakened. Therefore, an ambient light and back light are near stabilized by the duty ratio of an oscillation signal about 50% in a dark field, and the difference of coloring energy and decolorization energy becomes small. Therefore, EC anti-dazzle mirror serves as a high reflection property mostly, and can be maintained at a decolorization state.

[0045] As for EC anti-dazzle mirror, the property that a reflection factor changes like drawing 11 according to an ambient light and back light is acquired by operation of the above oscillation means 14. Here, in drawing 11 , the case where a sensitivity property is changed so that it may begin to color beginning to color by C points by D points is considered. If this change is tried by change of the value of the resistance R1 and R2 of drawing 6 , the curve of the 70% of the highest reflection factors will come to show drawing 11 with a two-dot chain line, and will break down curved balance. on the other hand -- if a circuit is adjusted by changing the permeability of the filter means 79 for back light of drawing 6 , without changing -- the curve of drawing 11 -- up and down -- a parallel displacement -- only carrying out (the parallel displacement of the curve being turned up, if permeability is decreased, and the parallel displacement of the curve being turned down, if permeability is increased.) -- it is -- curved balance does not collapse

[0046] In drawing 6 , the oscillation signal whose abbreviation +1.6"L" level "H" level is V and is abbreviation-1.6V is outputted from the oscillation means 14 (a capacitor C4 is the bypass capacitor for noise generating prevention of a power supply line). EC element driving means 24 are equipped with two switching transistors Q1 and Q2 by which complementary push-pull connecting was carried out among positive/negative supply voltage abbreviation**1.6V. And between the power supply line of abbreviation +1.6V, and the output terminal of the oscillation means 14, resistance R6 and R7 is connected in series, and the voltage of the node of resistance R6 and R7 is impressed to the base of a transistor Q1. Moreover, between the power supply line of abbreviation-1.6V, and the output terminal of the oscillation means 14, resistance R8 and R9 is connected in series, and the voltage of the node of resistance R8 and R9 is impressed to the base of a transistor Q2. By such composition, when the output of the oscillation means 14 is "H" level, a transistor Q1 turns off, a transistor Q2 turns on, and the energy of the decolorization direction is supplied to the EC element 20.

Moreover, when the output of the oscillation means 14 is "L" level, a transistor Q1 turns on, a transistor Q2 turns off, and the energy of the coloring direction is supplied to the EC element 20. Here, since resistance R10 and R11 is connected in series as an energy supply limit element, energy supply (current supply source) of the coloring direction and the decolorization direction is restricted by transistors Q1 and Q2, and the power consumption in the EC element 20 and generation of heat are suppressed. Moreover, electrically, since it is the same as that of capacity, the EC element 20 constitutes a time constant circuit among resistance R10 and R11 (R10 and R11, for example, both about 5ohms), and the speed of response of coloring and decolorization can loosen it. Therefore, while running night, repeating coloring and decolorization frequently and giving troublesomeness in a streetlight, the light of a store, the light of an oncoming car, etc., is prevented.

[0047] In addition, in drawing 6 , a switch SW1 is for fixing to decolorization mode compulsorily by an operator's etc. operation. That is, when a switch SW1 is turned on, since the voltage of the input side of an inverter 30 is fixed to "H" level, the oscillation means 14 suspends an oscillation, and the output level of the oscillation means 14 is fixed to "H" level. Therefore, a transistor Q1 is fixed to the state of ON of OFF and a transistor Q2, and the EC element 20 will be in a decolorization state.

[0048]

[Other Example(s)] Other examples of this invention are shown in drawing 12 . This EC anti-dazzle mirror 83 arranges a sensor outside a mirror field. The mirror main part 87 is held at front opening of the mirror body 85. Openings 89 and 91 are formed in a front-face and tooth-back side, and the light filter boards 93 and 95 are inserted in there, and it is fixed to the lower part of the mirror body 85. The back photosensor 12 and the ambient-light sensor 10 are placed in a fixed position by the back position of the light filter boards 93 and 95 in the mirror body 85, respectively.

[0049] A desired sensitivity property is acquired by choosing the permeability of the light filter boards 93 and 95. When the sensitivity property of either request is acquired, there may not be another side. Moreover, if the light filter board 93 is constituted so that 650-700nm red may be attenuated, it can be made hard to react to a red revolving light.

[0050] In addition, although the above-mentioned example showed the case where this invention was applied to an inner mirror, it is also applicable to an outer mirror.

[0051]

[Effect of the Invention] Since the light filter means of the light-transmittance fixation which decreases the amount of incident lights to the sensor concerned an

ambient-light sensor, a back photosensor, or ahead of both light-receiving sides has been arranged according to invention according to claim 1 as explained above, it can be easily set as an ideal sensitivity property by choosing the filter shape of a light filter means, without complicating an electrical circuit. Moreover, when a filter means is allotted to a back photosensor, existence of a back photosensor becomes unclear for an operator, and appearance quality improves.

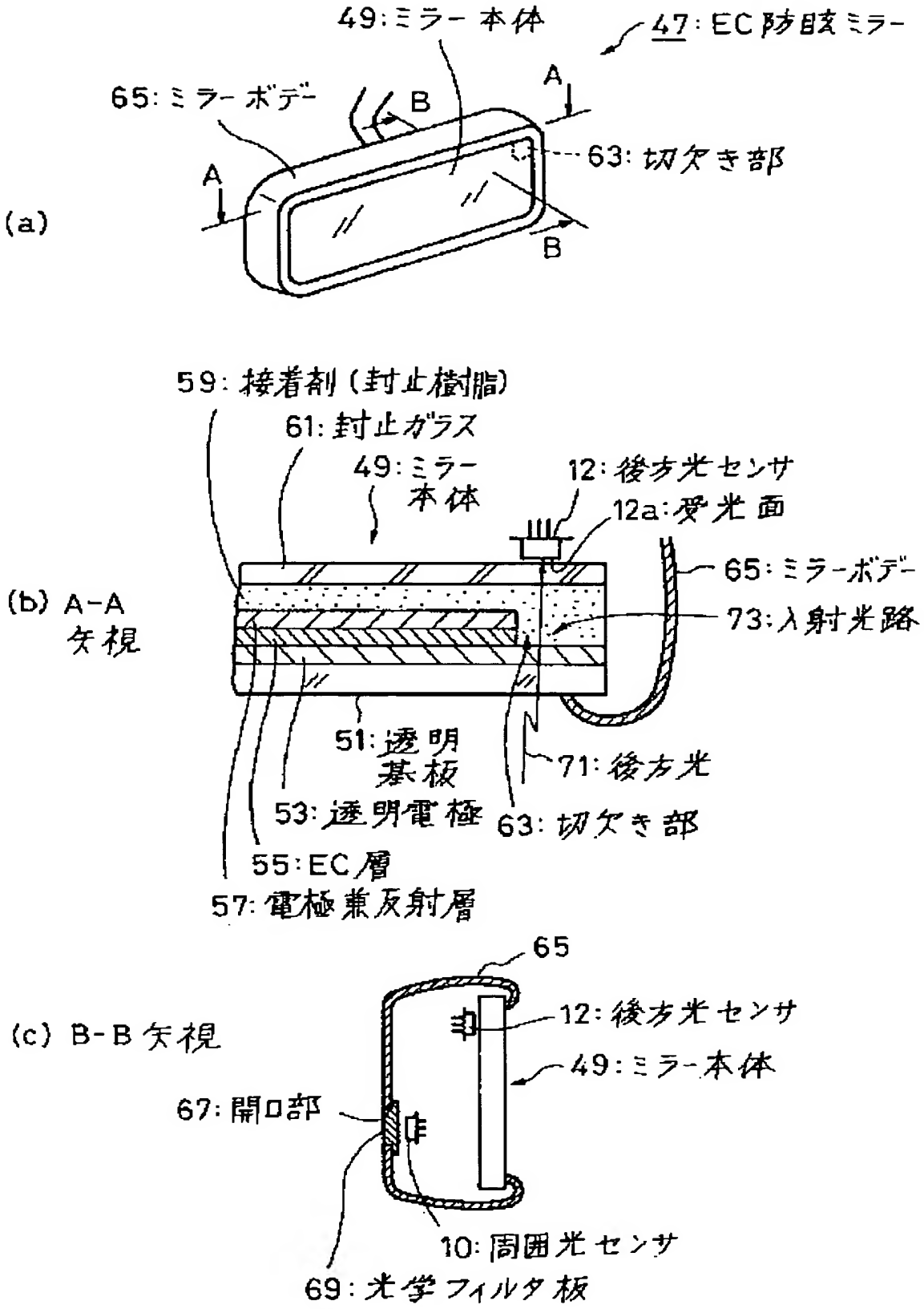
[0052] Since according to invention according to claim 2 lose EC layer and an electrode-cum-a reflecting layer from on the optical path of a back photosensor, lose a transparent electrode and EC layer, it is made for the optical path concerned to pass a closure resin and closure glass by having used an electrode-cum-the reflecting layer as the one-way mirror and the filter means of light-transmittance fixation was allotted on the optical path concerned, a back photosensor can detect the back quantity of light, without EC layer's wearing and being influenced of decolorization. Moreover, it can be easily set as an ideal sensitivity property by choosing the filter shape of a filter means, without complicating an electrical circuit. Moreover, since EC layer and an electrode-cum-the reflecting layer are closed with a closure resin and closure glass, it is intercepted from the open air and the degradation can be prevented. Moreover, by existence of a filter means, a back photosensor stops being able to be visible from an operator easily, and appearance quality improves.

[0053] Since it constituted from closure glass which colored or formed the light filter means in the shape of ground glass according to invention according to claim 3, the parts only for light filter meanses do not need to become unnecessary, and part mark do not need to increase. Since the light filter means was constituted from a colored closure resin according to invention according to claim 4, the parts only for light filter meanses do not need to become unnecessary, and part mark do not need to increase. According to invention according to claim 5, a filter means can consist of the films or sheet metal which absorbs a part of incident light, or is reflected.

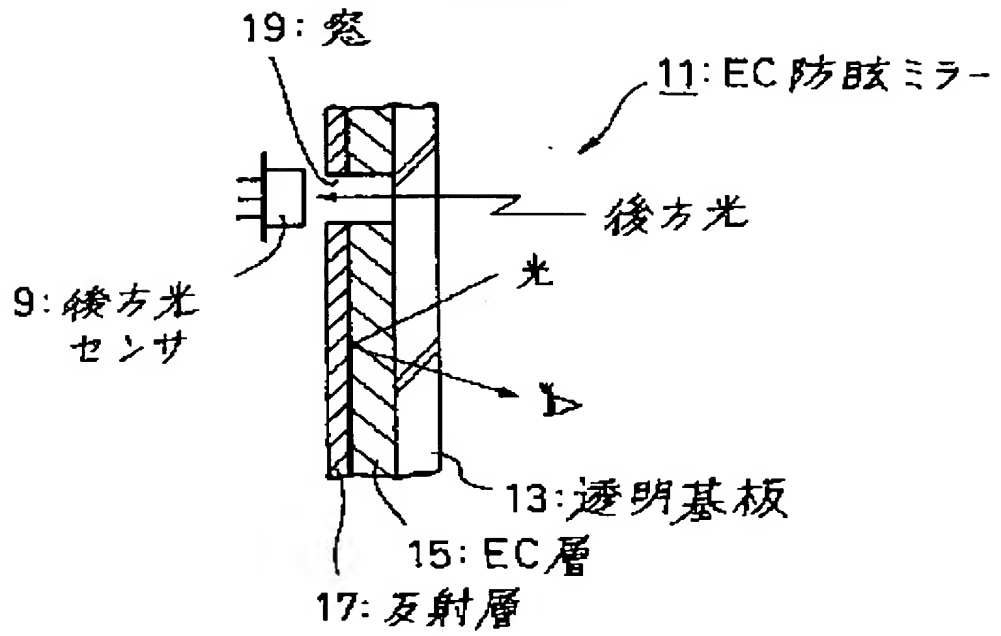
[0054] Since according to invention according to claim 6 the filter means was optically designed so that the red wavelength field of the light might be decreased especially among the amounts of incident lights to a back photosensor, it can avoid reacting to the light of the red revolving light of urgent vehicles, and an operator can be certainly told about approach of urgent vehicles.

DRAWINGS

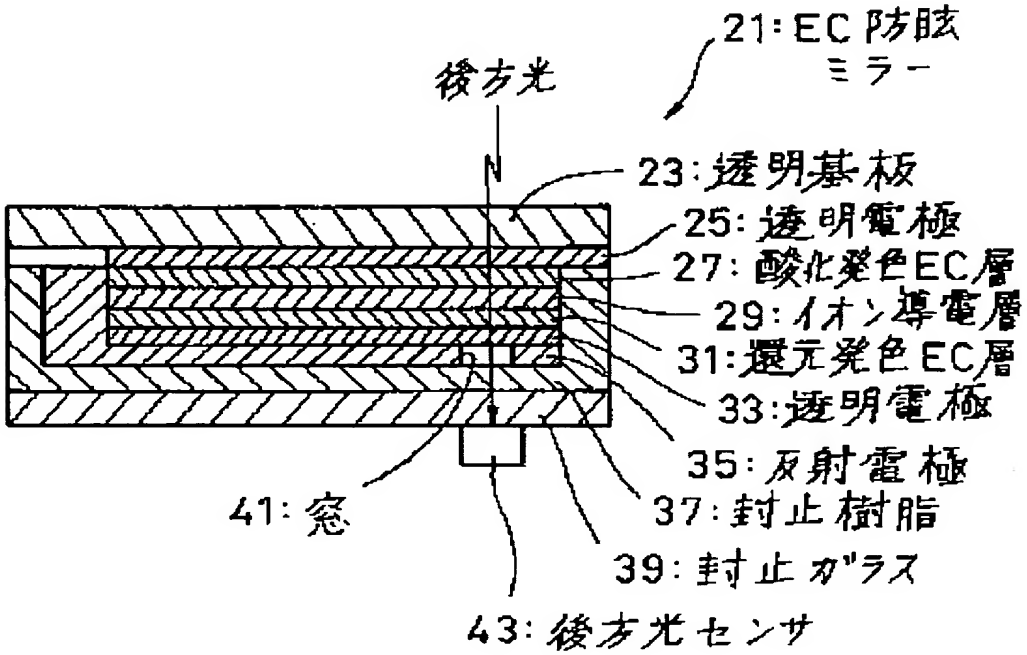
[Drawing 1]


49:ミラー本体
47:EC防眩ミラー
65:ミラーボデー
A
B
63:切欠き部
(a)
59:接着剤(封止樹脂)
61:封止ガラス
49:ミラー本体
12:後方光センサ
12a:受光面
65:ミラーボデー
(b) A-A矢視
73:入射光路
51:透明基板
71:後方光
53:透明電極
63:切欠き部
55:EC層
57:電極兼反射層
65
12:後方光センサ
(c) B-B矢視
49:ミラー本体
67:開口部
10:周囲光センサ
69:光学フィルタ板

[Drawing 2]

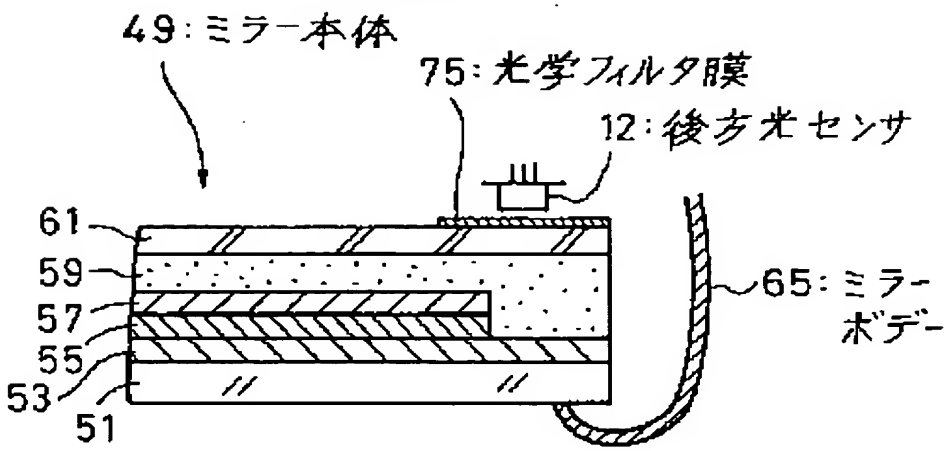


[Drawing 3]

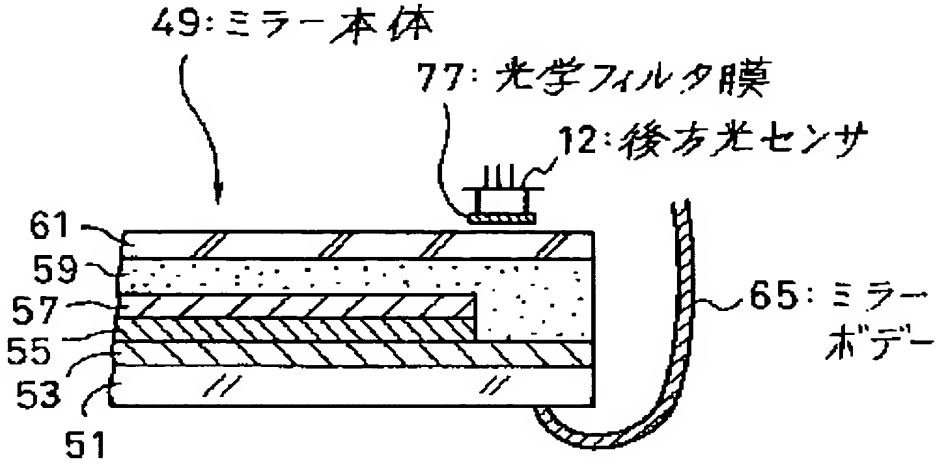


[Drawing 4]

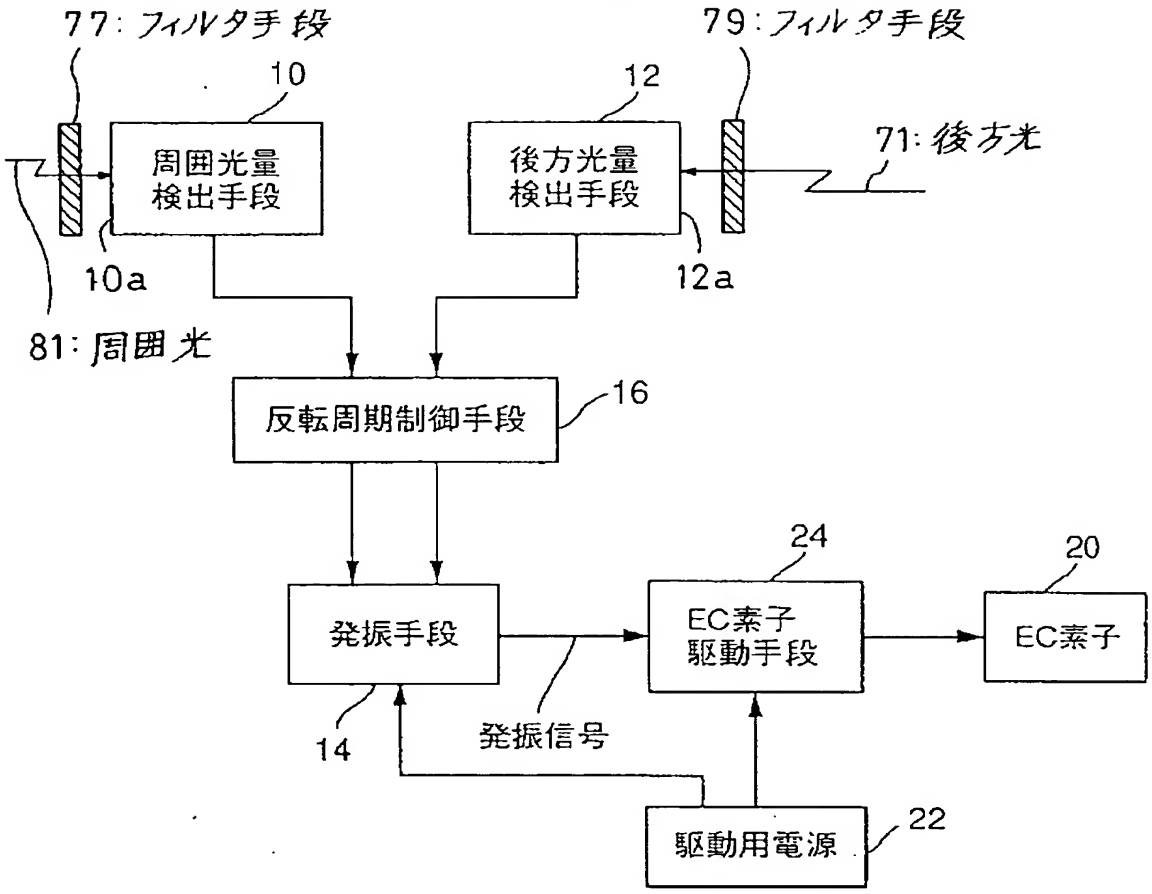
(a)


49：ミラー本体
75：光学フィルタ膜
12：後方光センサ
61
59
57
55
53
51
65：ミラーボデー

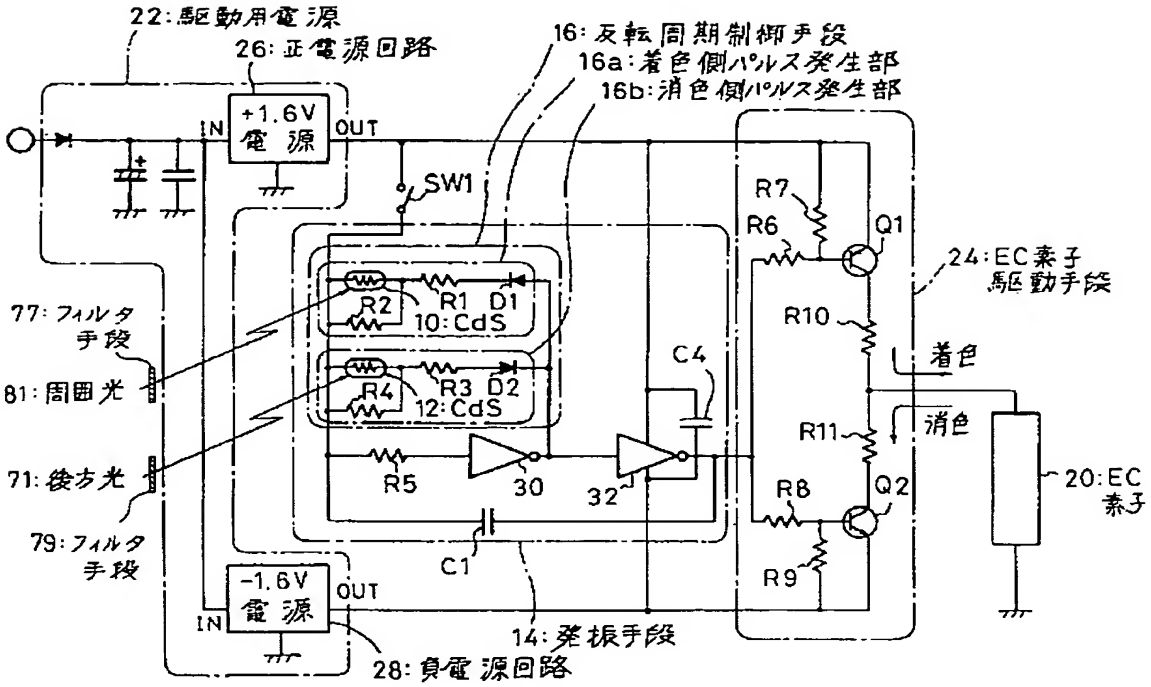
(b)


49：ミラー本体
77：光学フィルタ膜
12：後方光センサ
61
59
57
55
53
51
65：ミラーボデー

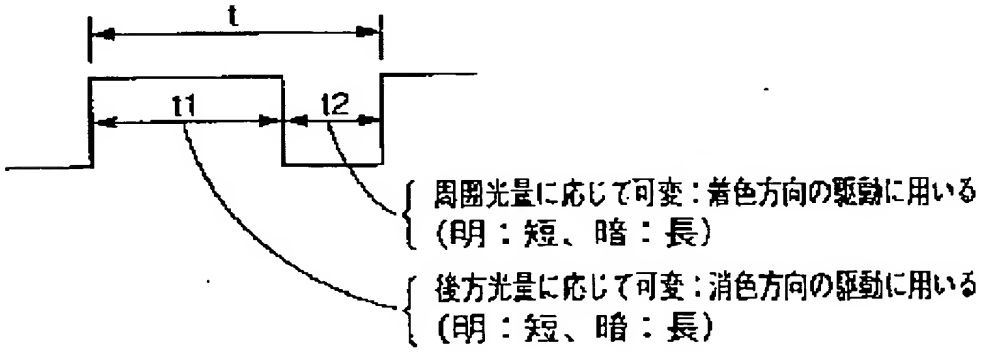
[Drawing 5]


77: フィルタ手段
79: フィルタ手段
10
12
周囲光量
検出手段
後方光量
検出手段
71: 後方光
10a
12a
81: 周囲光
反転周期制御手段
16
24
20
発振手段
EC素子
駆動手段
EC素子
14
発振信号
22
駆動用電源

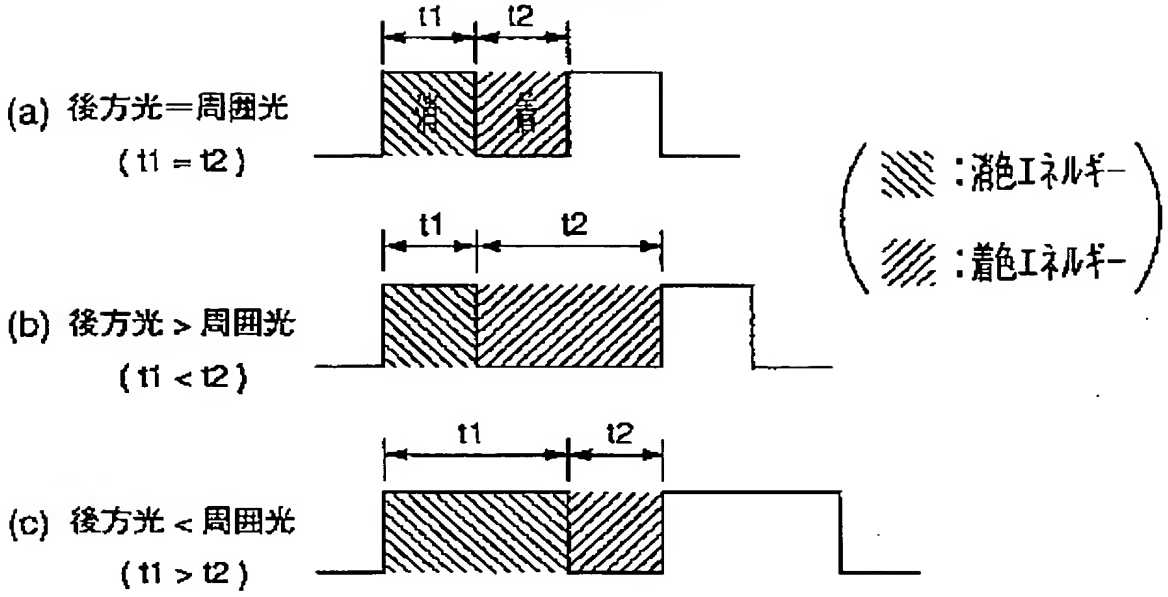
[Drawing 6]



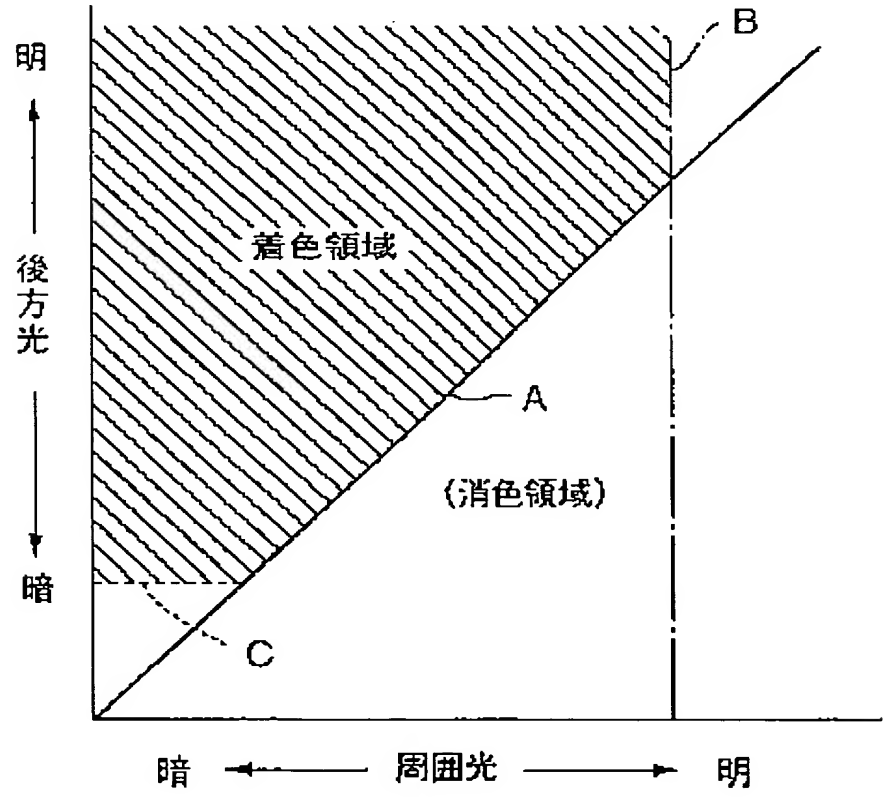
[Drawing 7]



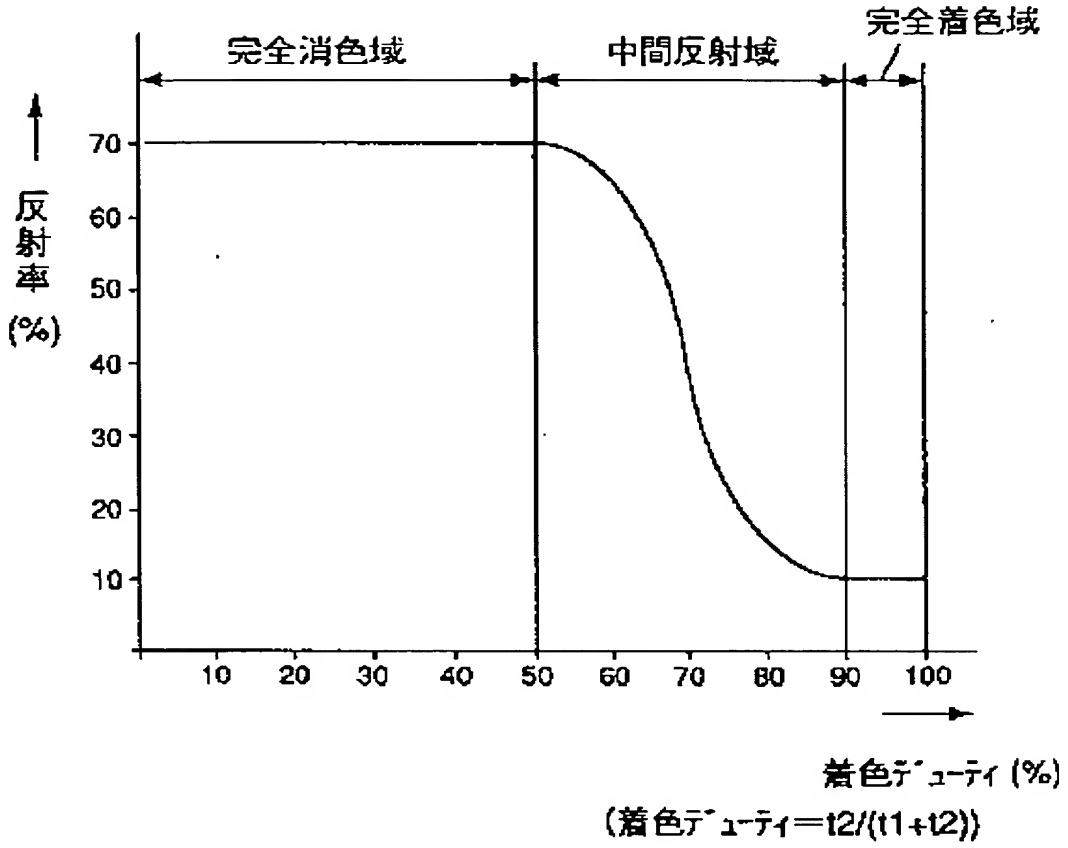
[Drawing 8]



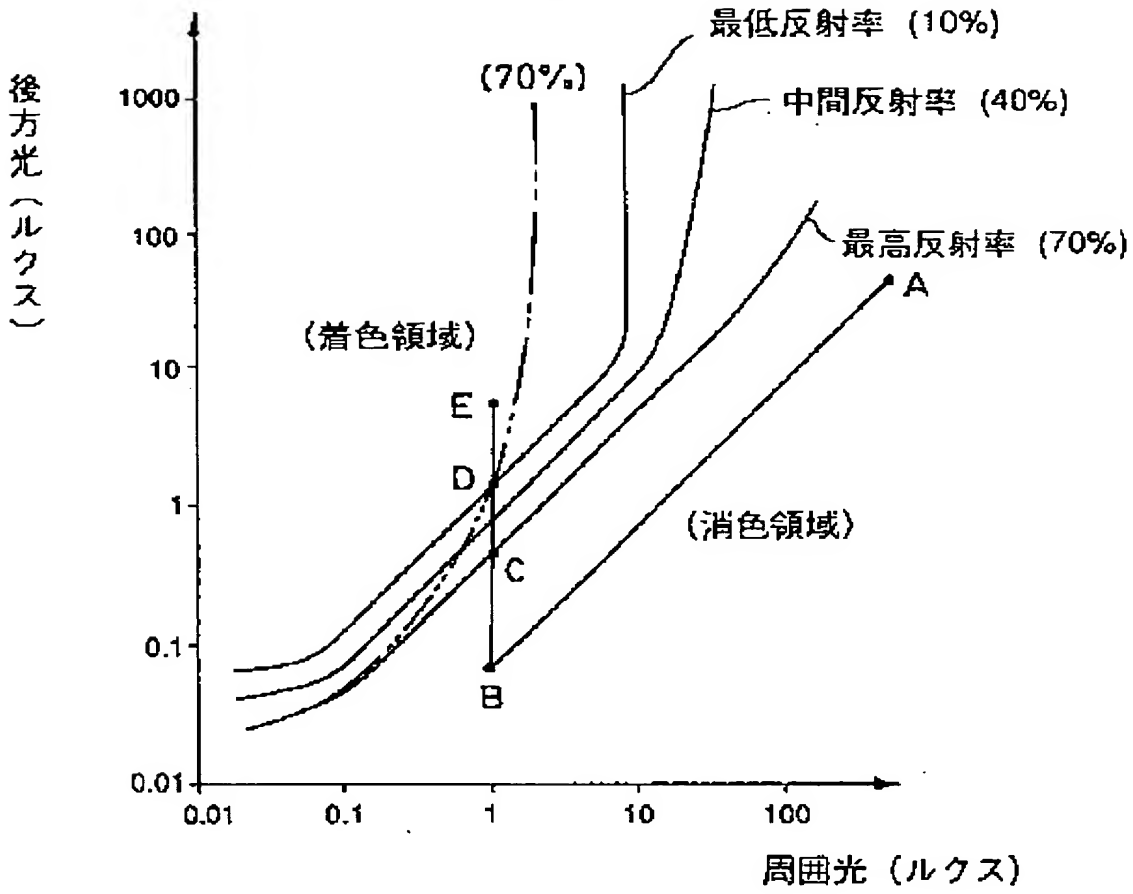
[Drawing 9]



[Drawing 10]

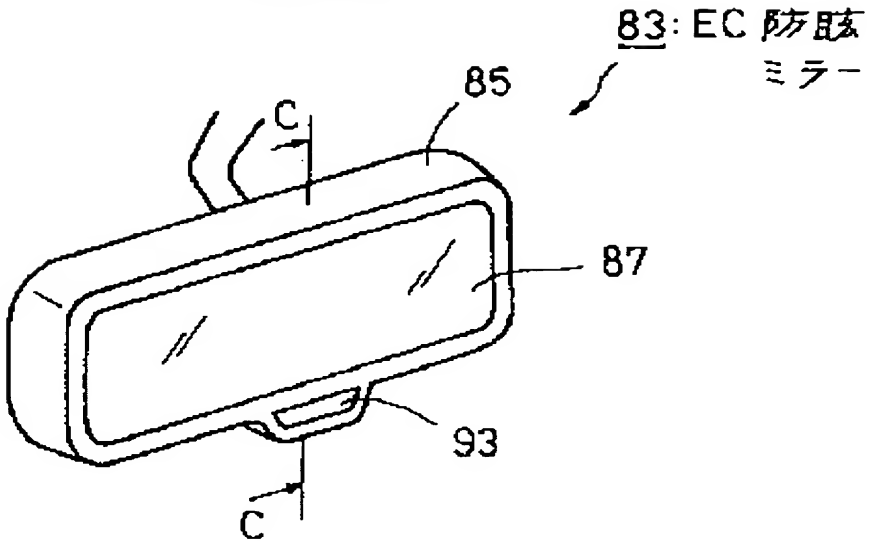

完全消色域
中間反射域
完全着色域
反射率 (%)
70
60
50
40
30
20
10
10
20
30
40
50
60
70
80
90
100
着色ﾃﾞｭｰﾃｨ (%)
(着色ﾃﾞｭｰﾃｨ＝t2/(t1+t2))

[Drawing 11]

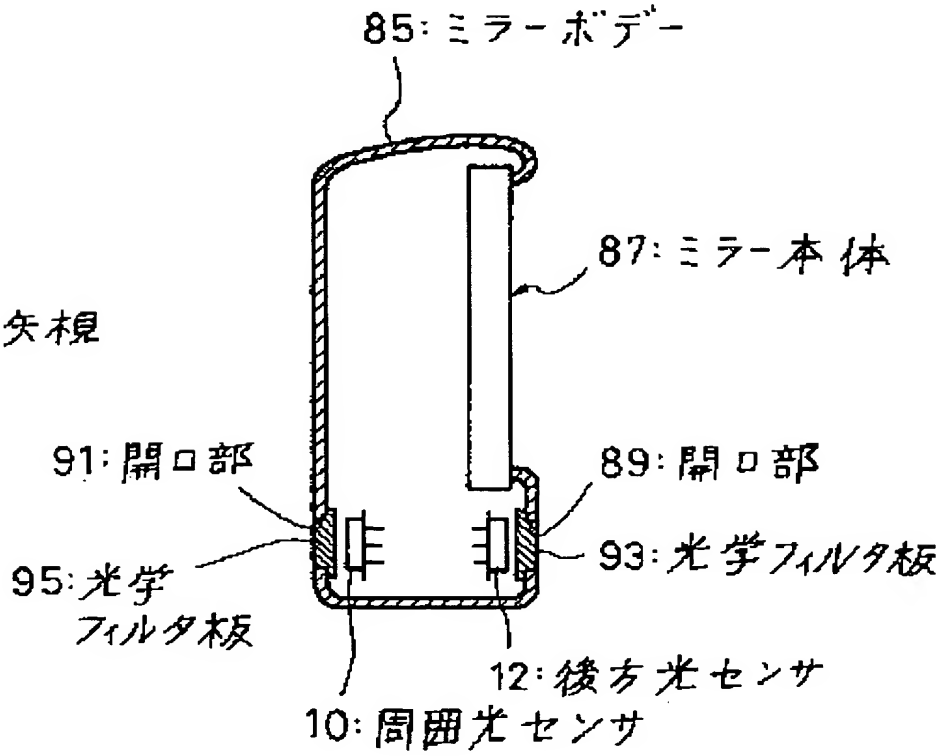

後方光（ルクス）
1000
100
10
1
0.1
0.01
0.01
0.1
1
10
100
周囲光（ルクス）
最低反射率（10%）
(70%)
中間反射率（40%）
最高反射率（70%）
A
（着色領域）
E
D
C
B
（消色領域）

[Drawing 12]

(a)



(b) C-C 矢視



DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the external view and cross section showing one example of this invention.

[Drawing 2] It is the cross section showing the conventional sensor placement.

[Drawing 3] It is the cross section showing another conventional sensor placement.

[Drawing 4] It is the cross section showing the example of arrangement of a filter means.

[Drawing 5] It is the block diagram showing an example which combined the filter means of this invention in EC anti-dazzle mirror driving gear of Japanese Patent Application No. No. 99291 [six to].

[Drawing 6] It is the circuit diagram showing the example of drawing 5 .

[Drawing 7] It is the wave form chart showing the oscillation output of the oscillation means 14 of drawing 6 .

[Drawing 8] It is the wave form chart showing change of the oscillation output of the oscillation means 14 of drawing 6 by the relation between the amount of ambient lights, and the back quantity of light.

[Drawing 9] It is drawing showing the ideal partition of the coloring field by the relation between the amount of ambient lights, and the back quantity of light, and a decolorization field.

[Drawing 10] It is drawing showing an example of the change property of a mirror reflection factor to the coloring duty of the driver voltage in EC anti-dazzle mirror.

[Drawing 11] It is drawing showing the change state of the mirror reflection factor by the relation between the amount of ambient lights by the driving gear of drawing 6 , and the back quantity of light.

[Drawing 12] It is the external view and cross section showing other examples of this invention.

[Description of Notations]

10 Ambient-Light Sensor

11 EC Anti-dazzle Mirror

12 Back Photosensor

12a Back photosensor light-receiving side

49 Mirror Main Part

51 Transparent Substrate
53 Transparent Electrode
55 EC Layer
57 Electrode-cum-Reflecting Layer
59 Adhesives (Closure Resin, Light Filter Means)
61 Closure Glass (Light Filter Means)
69 Light Filter Board (Light Filter Means)
73 Incident-Light Way
75 77 Light filter film (light filter means)